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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,724	03/19/2004	Jerry Rolia	200300271-1	8258
22879 7590 09/16/2010 HEWLETT-PACKARD COMPANY Intellectual Property Administration 3404 E. Harmony Road Mail Stop 35 FORT COLLINS, CO 80528			EXAMINER WILLIAMS, CLAYTON R	
			ART UNIT 2457	PAPER NUMBER
			NOTIFICATION DATE 09/16/2010	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/804,724

**Applicant(s)**

ROLIA ET AL.

**Examiner**

Clayton R. Williams

**Art Unit**

2457

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,4-12, 14, 15, 18-26 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-12, 14, 15, 18-26 and 28-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1, 4-12, 14, 15, 18-26 and 28-30 are pending in this application per amendment.

#### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Aug. 25, 2010 has been entered.

#### ***Claim Objections***

3. Claim 1 is objected to because of the following informalities:

The semicolon following the first limitation should be replaced with a colon. As interpreted by Examiner, the first limitation introduces steps that are preformed prior to provisioning resources to an application.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**5. Claim 29 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

Applicant claims a "computer program product". Page 31, para. 0084 of the specification does not limit the definition of "computer program product" to non-transitory tangible medium. The broadest reasonable interpretation of a claim drawn to a computer program product (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals per se in view of the ordinary and customary meaning of computer readable media. These are forms of energy such as signals; therefore the claim is directed to non-statutory subject matter. Appropriate correction is required.

In order to overcome the 101 rejection, Examiner suggests that Applicants amend the claim preamble to read "non-transitory computer-readable medium".

***Claim Rejections - 35 USC § 112***

**6. The following is a quotation of the second paragraph of 35 U.S.C. 112:**

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**7. Claim 1, 15, 29 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Regarding claims 1, 15, 29 and 30,

a. For the limitation "acquiring an entitlement profile...to requested resources over a time period", "requested resources" lacks antecedent basis.

b. For the limitation "identifying an entitlement value and corresponding...includes a measure of the application's expected burst for resources", "resources" lacks antecedent basis. Examiner suggests amending limitation to "the requested resources".

c. For the limitation beginning "indicating application entitlement to the requested resources in response to the determining and if the request is excessive...", Examiner cannot discern whether "in response to the determining" signifies that the application request for resources was approved or denied. If it is Applicant's intent that the limitation describe a case where the request is approved, Applicant should amend limitation accordingly. Furthermore, "the additional resources" lacks antecedent basis.

d. The last two limitations generally claim acquiring additional sliding windows and corresponding additional entitlement values. Thereafter, application requests are judged against these additional entitlement values and additional sliding scales. However, Examiner cannot discern whether the application will be denied requested resources in a scenario where the first "entitlement value" permits the application resources request but the additional entitlement values do not. Does the application receive resources where differing entitlement values provide conflicting results? If it is Applicant's intent that these additional sliding windows and additional entitlement values correspond to periods of time distinct from the first entitlement value and period of time, the limitations should be amended accordingly.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 4-12, 14, 15, 18-26 and 28-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Gasca, Jr. et al (20050198231: hereinafter Gasca), in view of Shabauddin (6877035: hereinafter Shabauddin), and further in view of Rottoo (5933417: hereinafter Rottoo).

For claims 1, 15, 29 and 30, Gasca discloses:

A method of policing resources in a computing utility facility, comprising:

intercepting an advanced request for resources from an application admitted to access a pool of resources associated with the computing utility facility and prior to utilization of the pool of resources to execute the application ([0057], lines 1-4: "At block 300, the process waits for a new provisioning request". The utility computing system receives a provisioning request on behalf a customer application.);

acquiring an entitlement profile associated with the application to determine if application is entitled to requested resources over a time period ([0057], lines 5-8: "At block 302, customer entitlement is checked. Checking customer entitlement (302) is a matter of knowing what kinds of resources are promised in the service level agreement (SLA)". Furthermore, [0057], lines 16-18: "Additionally, there could be time constraints

(e.g. the customer is entitled to 20 servers between 8 am and 5 pm, but only 10 servers the rest of the time.");

identifying an entitlement value and corresponding sliding window of the time period from the entitlement profile ([0057], lines 16-18: Utility computing system curtails use of resources with respect to specific time windows. "Additionally, there could be time constraints (e.g. the customer is entitled to 20 servers between 8 am and 5 pm, but only 10 servers the rest of the time.");

determining if the request for resources exceeds the entitlement value associated with the sliding window ([0057], lines 7-11: "For examples, stored customer information extracted from an SLA may say that the customer is entitled to the use of Z number of database servers. If the provisioning request is for Z+1, the customer is not entitled to have that provisioning request fulfilled); and

indicating application entitlement to the request for resources in response to the determining and if the request is excessive including throttling of the requested resources when the application is not entitled to the additional resources in accordance with the entitlement profile ([0057], lines 16-18: Utility computing system curtails use of resources with respect to specific time windows. "Additionally, there could be time constraints (e.g. the customer is entitled to 20 servers between 8 am and 5 pm, but only 10 servers the rest of the time.");

Gasca fails to explicitly disclose:

"wherein the entitlement profile associated with the application describes burstiness of the application over the time period, and the burstiness includes a measure of the application's expected bursts for resources".

However, Shabauddin discloses:

"wherein the entitlement profile associated with the application describes burstiness of the application over the time period, and the burstiness includes a measure of the application's expected bursts for resources" (Shahabuddin, col. 5, lines 31-32, and col. 6, lines 10-15 and 21-24, discloses a resource sharing system wherein predicted client behavior is modeled for purposes of forecasting future resource requirements: The client resource requirement is modeled as a stationary stochastic process. Web access rates are typically distributed differently during the day. This fact is captured by dividing the day into  $k$  time slots (e.g.,  $k=24$  and each time slot is an hour long) and modeling the resource requirements of each client as a different stationary stochastic process in different time slots and for different resources. For resources and  $k$  time slots, the resource requirement of each client is modeled as a random vector having  $d=r*k$  dimensions.). Gasca and Shabauddin are analogous art because both disclose methods for allocating shared resources in a utility computing system on a per customer basis.

It would have been obvious to one skilled in the art at the time of the invention to introduce Shabauddin's teachings of predicting client resource demands with Gasca's teachings of provisioning shard resources per customer agreement because Shabauddin would extend Gasca's provisioning system to take into account the



anticipated needs of a hosted client application. As a consequence, shared utility computing resources could be more efficiently allocated in light of predicted customer application behavior.

The combination of Gasca and Shabauddin fails to explicitly disclose:

“acquiring additional sliding windows and corresponding additional entitlement values to determine if the request for resources exceeds at least one entitlement value and sliding window combination; and

indicating that the application is not entitled to the requested resources when the request exceeds the entitlement value in at least one entitlement value and sliding window combination”.

In the same endeavor of shared computing resources, Rottoo disclose:

“acquiring additional sliding windows and corresponding additional entitlement values to determine if the request for resources exceeds at least one entitlement value and sliding window combination (col. 7, lines 15-25: The cited passage discloses a reservation query system in which an application makes advance requests for shared resources that are desired to be consumed. col. 8, lines 8-15: Specifically, a resource availability matrix is disclosed as providing future availability of resources as per previously reserved computing tasks.); and

indicating that the application is not entitled to the requested resources when the request exceeds the entitlement value in at least one entitlement value and sliding window combination” (col. 5, lines 35-47: the system is disclosed as apprising a requesting application of resource availability for requested future time periods).

It would have been obvious to one skilled in the art at the time of the invention to introduce Rattoo's teachings of comparing an application resource request against a plurality of "additional sliding windows" with Gasca's and Shabauddin's teachings of provisioning shared resources per customer contractual agreement. The combined system would have evaluated application resource requests against a plurality of future time slots and corresponding customer entitlement to use of those future time slots. The motivation to combine would have been to more efficiently allocate shared computing resources by fine-tuning resource allocation per granular time slots.

For claims 4 and 18, the combination of Gasca, Shabauddin and Rattoo discloses:

The method of claim 1 wherein a burst loading factor associated with each sliding window corresponds to the burstiness of the application and identifies a portion of an aggregate entitlement to the resources available to fulfill the request (Shahabuddin, col. 5, lines 31-32, col. 6, lines 10-15 and col. 6, lines 21-24).

For claims 5 and 19, the combination of Gasca, Shabauddin and Rattoo discloses:

The method of claim 4 wherein a larger burst loading factor is associated with more bursty applications that may need resources more rapidly compared with a smaller burst loading factor is associated with applications that may not need resources as rapidly (Shahabuddin, col. 6, lines 35-45: The past access pattern of client i is used to estimate the distribution of [future client resource demands]).

For claims 6 and 20, the combination of Gasca, Shabauddin and Rattoo discloses:

The method of claim 1 wherein the entitlement value is derived from historical trace information collected while the application is using resources (Shahabuddin, col. 7, lines 40-44: The monitoring system 112 consequently produces a utilization pattern database 114, which is provided as input to the decision support system 116. The decision support system 116 provides suggestions to a module 122 for allocating resources optimally to clients.).

For claims 7 and 21, the combination of Gasca, Shabauddin and Rattoo discloses: The method of claim 1 wherein the burst loading factor is derived from the historical trace information collected while the application is using resources (Shahabuddin, col. 7, lines 40-44).

For claims 8 and 22, the combination of Gasca, Shabauddin and Rattoo discloses: The method of claim 3 wherein the resource usage is determined according to an estimated probability mass function (Shahabuddin, col. 6, lines 10-16: The client resource requirement is modeled as a stationary stochastic process.).

For claims 9 and 23, the combination of Gasca, Shabauddin and Rattoo discloses: The method of claim 4 wherein the estimated probability mass function further includes a confidence interval corresponding to a sample size used for determining the estimated probability mass function (Shahabuddin, col. 6, lines 35-49: Alpha-satisfiability is introduced as a measure of QoS. A client is said to be alpha-satisfied if the client receives a promised capacity at least alpha proportion of time in each dimension.).

For claims 10 and 24, the combination of Gasca, Shabauddin and Rattoo discloses:

The method of claim 1 wherein the entitlement value operates as a metric for determining whether an application is entitled to the requested resources (Shahabuddin, col. 7, lines 47-49: The decision support system takes input from monitoring system produced database model and service level agreements to make decisions regarding allocation of resources).

For claims 11 and 25, the combination of Gasca, Shabauddin and Rattoo discloses:

The method of claim 10 wherein the entitlement value for an application is proportional to the burstiness of the application in view of resource usage derived from historical trace data (Shahabuddin, col. 7, lines 40-44).

For claims 12 and 26, the combination of Gasca, Shabauddin and Rattoo discloses:

The method of claim 1 wherein determining if the request for resources exceeds the entitlement value further depends on a confidence interval associated with the entitlement value and the number of sample values used to identify the entitlement value (Shahabuddin, col. 6, lines 10-15 and 35-49: A disclosure of utilization patterns having confidence interval bounds and accuracy based on number of data samples taken to construct model ).

For claims 14 and 28, the combination of Gasca, Shabauddin and Rattoo discloses:

The method of claim 1 wherein indicating application entitlement includes clawing back resources already allocated to the application when the application has exceeded a time

limit for using the allocated resources (Gasca, [0057], lines 16-18: Utility computing system curtails use of resources with respect to specific time windows. "Additionally, there could be time constraints (e.g. the customer is entitled to 20 servers between 8 am and 5 pm, but only 10 servers the rest of the time.")

### ***Response to Arguments***

Applicant argues that the prior art of record does not disclose:

"acquiring additional sliding windows and corresponding additional entitlement values to determine if the request for resources exceeds at least one entitlement value and sliding window combination; and  
indicating that the application is not entitled to the requested resources when the request exceeds the entitlement value in at least one entitlement value and sliding window combination".

Examiner disagrees. Rattoo, col. 7, lines 15-25, discloses a reservation query system in which an application makes advance requests for shared resources that are desired to be consumed. Specifically, col. 8, lines 8-15, teaches a resource availability matrix as providing future availability of resources as per previously reserved computing tasks. And, upon determining that the application is not entitled to the requested resources when the request exceeds the entitlement value in at least one entitlement value and sliding window combination, col. 5, lines 35-47, discloses the system apprising the application of its denial of requested resources for the designated future time periods.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clayton R. Williams whose telephone number is 571-270-3801. The examiner can normally be reached on M-F (8 a.m. - 5 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 571-272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Clayton R Williams/  
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8/29/2010

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